

# THINK: Art+Architecture Camp

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**WHAT:** Design-build camp for learning-by-doing on African architecture

**WHO CAN PARTICIPATE:** Open to all students and graduates of design, architecture, art, engineering, camp leaders and schools interested in sustainable architecture and rural community development projects in Africa

**WHERE:** Sang Arts Village in Sang, 50 kilometers from Tamale in Northern Ghana

**DATE:**

10x10 Shelter Workshop;

**September 2-30, 2012**

Rammed Earth Workshop;

**October 22, 2012- February 2, 2013**

Vault Roof for the Savannah;

**February 7 - May 7, 2013**

A Natural Acoustic Studio;

**March 21- May 7, 2013**

Open Forum;

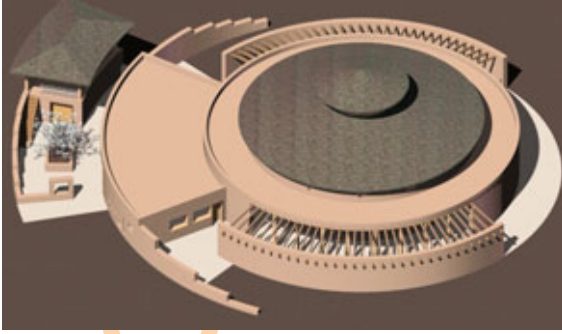
**June 2 - August 2, 2013**

Sang Land Art Museum;

**October 2, 2013 - August 2, 2014**

**DEADLINE:** Application is on rolling basis (until spots are filled)

**THINK** is designed as an art+architecture camp within the sub-Saharan landscape. This camp is intended to bring together participants from diverse cultures to explore the relationship between art and architecture to generate a modern structure using sustainable materials from the local environment such as earth, straw, stone, wood, and recycled/reused materials. The goal is to adapt vernacular construction techniques and materials, such as cob, natural plaster, grass thatching and vaulted roof to create a workshop/ learning center for the local community. This project offers a unique opportunity for architects and builders to collaborate with artists in the design-build process, exchange innovative ideas towards realization of the Sang Land Art Museum designed by Arunima Chatterjee.



**Sang Land Art Museum Architect:** Arunima CHATTERJEE (India/Singapore)

### A DESIGN PROBLEM:

Sustainability has been a major challenge in Africa's development. One means of promoting Africa's development is by sustaining replicable models of human capital growth, especially in the rural areas. Vernacular mud homes in the region are poorly constructed; wall cracks, short lifespan of the thatched roof and water damage are common. We did a Rapid Rural Appraisal of the vernacular architecture in Sang. The findings indicate that the general lifespan of grass thatched roof is twelve years. A new layer is needed every three years. Even within the twelve-year frame, some of the grass thatched roofs collapse after a few years owing to structural problems. Some residents say that some of the roofs collapsed because of the weight of the several layers of the grass. We observed that the roof framing involve mainly tree branches. We think that design-build camp series involving local and participants from diverse countries can help generate alternatives by cross fertilization of knowledge and skills.

The design-build process will start with site analysis that entails gathering of physical data on the local vernacular building arts to generate a well designed, structurally sound building. The team will then work with local artisans to construct their project and to create murals and product designs to integrate into the unit. There will be a community day to celebrate and commission the project for use. The design-built process will conclude with a Roundtable Seminar at the nearby University for Development Studies to piece together the emerging trends and opportunities for art+architecture collaborations in the global marketplace of ideas. Join us! Show the world how to re-invent the vernacular African mud house!

The **THINK** participant is expected to keep a process journal involving field-notes, sketches, photographs, or video to generate a DVD about the camp, or other creative works to disseminate the experience. **THINK** is organized by Nka Foundation in collaboration with CCEIR at the University for Development Studies and Sang Project Focus Team mobilized through the United Nation's onlinevolunteering.org.



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## **COST**

The cost per person for the 6-week camp is 1,040 EUR / 1,350 USD. For a project longer than 6 weeks, add €100 per week. This is based on a team size of 7-13 persons and the team managing the fund.

## **WHAT IS INCLUDED**

- Pre-departure Information
- Airport Pick Up and Transfer
- Community Coordinator and Camp Staff Support
- Cultural Orientation
- Accommodation (in Arts Village setting or home-stay)
- Food (2/3 meals a day) During Project
- Risk Assessments for All Activities
- Project Costs and Logistical Support for Construction
- Certificate of Appreciation / Completion

## **WHAT IS NOT INCLUDED**

- International Flight Expenses (airfare, airport taxes, visa, and immunizations)
- Personal Expenses (souvenirs, emergency/medical expenses, toiletries, etc.)
- Snacks and Beverages (any soft drinks, mineral water, etc)
- Medical / Travel Insurance Policy
- In- Country Travel Expenses Including Any Extra Sightseeing
- Meals Other Than Those Provided
- Tips or Gratuities

*(We recommend you allow a weekly minimum budget of 70Euro/90USD to cater for your in-Ghana expenses)*

## **APPLICATION**

There are no fixed deadlines; applications are accepted until all spots are filled. To apply e-mail your CV/resume, date you are applying and website/examples of your work to [info@nkafoundation.org](mailto:info@nkafoundation.org). A School or an organization may apply as a group and fill up a camp session, and may request some modification to fit their context. For additional information on our previous projects go [www.nkafoundation.org](http://www.nkafoundation.org).



## PROJECT SITE



Project site is situated in Sang, the administrative capital of the Mion District in the Northern Region of Ghana. The Mion District was created in 2011 from the Yendi District. Sang Township is on the Tamale-Yendi Road. It is about 50 kilometers from city of Tamale and 70 kilometers from Yendi. The predominant ethnic group is the Dagomba. The primary spoken language entails Dagomba; English language is secondary. 70% of the people are peasant farmers, and others engage in fishing, trading, administrative and managerial work. Farm products include cattle, fishes, goats, maize, millet, rice, peanuts, and beans and 32 varieties of yam. Some of the women folks engage in small scale charcoal burning for fuel. Trading in consumer goods is an important occupation in Sang because Sang is a favorite stop for road travelers, as it is located

midway between Tamale and Yendi. The walls of vernacular houses are usually of earth, which are built by cob method. The roof is either of grass thatching or corrugated zinc sheets. Sang has several elementary schools and a junior high school, orphanage, Christian missions nursery school, police station, public water and electricity. Christianity and Islamism are the primary means of worship.

Sang Arts Village project is located in a grassland region. Tall trees are sparse. Shea trees are populous on site. Top soil is mostly of gravels. There is a rock pit near the small valley on site from where participants can dig out pieces for project.

### Typical Dagomba Village Housing:

In a typical Dagomba village, villagers arrange their houses in a specific pattern. The Paramount Chief situates his dome-shaped hut in the center of the village. Of its grandeur, the chief's hut stands out from the rest of the houses. The village is sub-divided into quarters or wards, all in position to the chief's home. A ward is known by its head or by its dominating specialist group, such as a soldiers' ward and hunters' ward. The general public are scattered throughout the village in clusters of round and rectangular huts. Specifically, women dwell in the round house type and men live in rectangular mud houses.

## OUR WORKING DEFINITIONS AND NOTES

### OPEN FORUM

We define Open Forum as “any thing goes” that explores the relationship between art and architecture.

### A NATURAL ACOUSTIC STUDIO

A Natural Acoustic Studio implies design-build of a media arts space that integrates natural acoustic properties for use in sound arts experimentation and has a room for sound recording.

### 10X10 SHELTER

By 10x10 Shelter Challenge, we imply the design-build of a unit of a modular system composed of workshops/ learning centers that are connected together for community arts programme. The unit should last for at least 30 years. The structure can be of any height. It can be biomorphic, geometric or something in between, but a part of the interior space should be 10 feet x 10 feet or 100 square feet.

### COMMUNITY ARTS

Community arts, also known as “participatory arts” or “community-based arts,” refers to a world of artistic processes and forms made by, with, and for a community setting that may emphasize community involvement and collaboration, most often it involves engagement with the issues and practices for communal bonds and empowerment for grassroots social change. We define the arts broadly to include visual arts, literary arts, performing arts, design, film/new media, arts history, arts criticism, arts education, arts administration, curatorship, building arts, and emerging others in the global marketplace of ideas. Along these lines, you may come with your instrument of amusement. If you play a musical instrument, or create with another your national tools to amaze the rurals, bring it along for impromptu performances, short takes, and large audience performance. If project is a building, selected process drawings and product designs/artworks resulting from the camp will be permanently integrated into the unit for the purpose of teaching about the design-build community process.


### EDUCATIONAL OUTREACH

By educational outreach, we imply the process and structure for reaching out to the local or global educational arenas to enrich, share knowledge and skills of our project participants or to disseminate project results. Just so that you know, the elementary and secondary school year in Ghana runs from September to July. It is divided into three terms. The first term starts in September and ends by mid-December. The second term begins by early January and ends in March, while the third term begins in April and ends in July. The university academic year normally runs from mid-August through late June. Here are some examples to guide your choices of interactive materials for the community outreach:

(a) K-12 educational outreach programming is to engage the students in the elementary and middle schools in Sang and environs. The educational program may be via workshops, classroom visits, motivational acts during school’s morning assembly, or afterschool activities.

(b) Trade Skills Development, such as practical acts with the disadvantaged youths and/or rural mothers to empower their economic, educational or social mobility along the project issues. This will be coordinated by Livelihood Empowerment Center, our local partner NGO.

(c) Practical acts and theoretical presentations in the nearby colleges and universities is another outreach opportunity open to the international participants. It could be as a prelude to the main project event to introduce participants and their practice or as finale to share the results of project engagements. The colleges include Tamale Polytechnic (<http://tamalepoly.edu.gh>) and University for



Development Studies-UDS ([www.uds.edu.gh](http://www.uds.edu.gh)). Contact with the college will have to be made well in advance of your arrival. One option is the Centre for Continuing Education and Interdisciplinary Research (CCEIR) for a presentation to either promote continuing global education among students, or to share your interdisciplinary research. The contact person at CCEIR is Dr. Abdulai Abubakari ([abkaria72@yahoo.co.uk](mailto:abkaria72@yahoo.co.uk)). And for upscale lecture, contact the UDS International Lecture Serials ([international@uds.edu.gh](mailto:international@uds.edu.gh)). We recommend posting posters of your theoretical or practical act at specific places in the college to invite everyone.

(d) Any or all of the above in another region or country via gallery exhibition, social media, web site development or conference presentations.

## **CULTURAL ORIENTATION**


Orientation to the local culture, history, safety, religious, and other issues relating to the country will occur throughout the camp period. It may entail immersion in some events in the everyday life of the host community, such as wedding, naming ceremonies, burials celebrations, and school settings. Rapid Rural Appraisal, collaborations with local artisans on project, and cooperative kitchen will also apply. For example, meals will be served by cooperative kitchen in which participants take turns in working with the cook in the planning, shopping and cooking. It has been more of a dinner party, a time to come together to sample cuisines from different countries, have fun at the table and bond as a community. On specific days, we will use the dinner moment as evenings for debriefing/group discussions to assess project progress, and informal presentations by participants.

## **COB FLOOR**

This method of earth flooring is unique to our project. It evolved from an effort to resolve a construction challenge. To create a cob floor, follow the following procedure. First, raise the walls; the walls are to serve as form, as in formwork for concrete. Second, fill the floor with red earth, same stuff used for the mud wall. Third, pour in water and mash the mixture with the feet. Get many helpers to join in the marsh party. Mash the mud as you would for the pottery, just as you did in the put pit for making mud for the walls. While wet, use a long straight-edged 2x4 plank as a screed for leveling the mudcrete. Work the 2x4 back and forth in sawing fashion to level the mudcrete at all points across the room. Have a helper with a rake move the crete in front of the screed plank as you drag the screed across the surface. If the room is square or rectangular in shape, you can press the surface with a sheet of plywood on the second day. By tamping on the sheet of plywood with the feet, you are further leveling the surface, even compressing the floor. Leave for about 4 days for the cob floor to dry. Do the whole room in one session. Once compacted, dried, and sealed with local dawadawa liquid, or another water proofing agent, the cob floor can be polished to a mirror finish. The result is a hard floor.

## **WALL PLASTERING AND WATER PROOFING**

Among the Dagomba people, male folks build the mud walls and the women are responsible for plastering and water proofing the walls and floors. Plastering the outdoors walls and floors of the veranda and the outer courtyard with a mixture of fresh cow dung and red earth is a common practice. For plastering the floor, liquid from dawadawa leaves mixed with crushed anthill soil can be used in place of cow dung. The plaster is applied to the courtyard floor and compacted with wooden mallet. The surface is left to dry. The mixture can be used to raise patterns on the plastered surfaces by rolling out and pressing it into the wall to create beautiful patterns. Note that if the surface is not first plastered with same mixture, when the decorative patterns are fully dried they will fall off.



For waterproofing the plastered surface, a coat of fresh cow dung is the most popular vernacular choice because once the coat dries the layer is impenetrable by rain water. Some people prefer treating their mud walls and mud beds with shea butter from shea trees, populous in the village, to make the surface impenetrable by water. The modern alternatives to dawadawa and cow dung are bees wax, liquid paraffin. They are applied to the surface and burnished to create a shiny and water resistant surface. The less explored alternative is the ash soap (black soap). The ash soap (a mix of palm oil and ash) is diluted 1 to 5 parts water. It is beaten with a whisk until it bubbles. It is the soap scum (bubbles or lather) that is applied to the plastered surface. The lather from the cheap yellow bars of soap you can buy at Sang would work sufficiently well for the waterproofing. The surface is burnished with a flat stone and the application of soap lather is repeated as long as there is moisture in the plastered wall or floor.

Once compacted, dried and sealed, the plastered floor or mud bed can be polished to a mirror finish. Because the surface is somewhat uneven, variety of stones (or rigid piece of plastic) are used for burnishing (smoothing) the floor or wall sections. When the wet surface has set sufficiently that a fingerprint is no longer visible, burnishing (polishing) with a stone begins. The stone is used to go over the surface in small consistent circular motions.

There are several alternatives to finishing the walls by plastering such as relief work and painting the surfaces. By relief work, we imply that the mud surfaces (walls, floors, beds and benches) can be carved into, decorated with raised patterns to create relief artworks. Natural (or reused) materials can also be embedded into the surfaces, and then waterproofed.

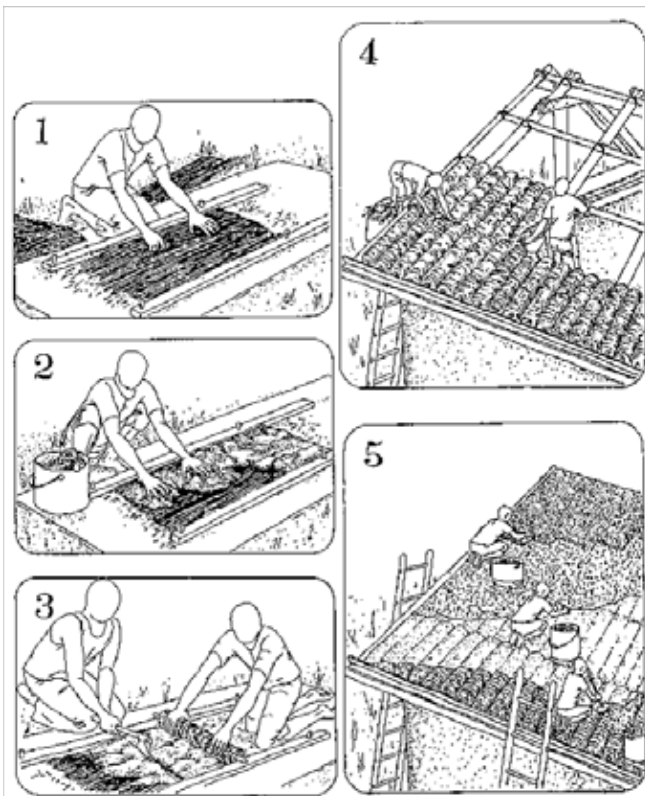
## **EARTH REELS METHOD**

Earth reel involves rolling some thatch grass saturated in mud around a hard stick (wooden spindle). The method can be used to create gabled roof and cathedral ceiling, as well as flat ceiling construction.

**EARTH REELS ROOFING:** Earth reels system is a good method of insulation. It can be to create gabled or sloping roof in semi-arid climates. Because of its density and ability to retain heat, reels construction system is also suitable for flat roofs in hot dry or mountainous regions, where days are hot and nights are cool. Waterproofing is however necessary to ensure resistance to rain water effects.

**MATERIALS AND CONSTRUCTION:** The main piece is the reel, which is a coil (see fig. 3 below) made by rolling long thatch grass saturated with mud paste around a hard stick (3 - 5 cm in diameter, 80 - 120 cm long). To prepare the earth reels and construct the roof, follow the steps in the diagram below. The paste of red earth (mud slurry) is the same used for atapkame (cob) walls, except that the mixture for this has more water in it. Lay the earth reels in rows in vertical pattern on the beam/purlins frame. When reels are still moist, press the reels against one another and fill the spaces between the coils with the mixture of chopped grass and mud slurry. After drying, fill any cracks with the same paste of mud and finely chopped grass, and then build the whole surface up to 2 cm layer and a finishing coat of stabilizer above the rows. Finally the roof is sealed with asphalt or another waterproofing agent. Given the large proportion of fibers and wood, earth reels roofing is not suitable for forest regions where the risk of being affected by termites is great.

To prepare earth reels for ceiling or roofing, do the following: (1) First, build a work table (bench), or you can use a large flat board to set a frame for preparing the reels. On the bench nail 2 x 4 inch battens (two long one and one short one) to a board to form a "U" shaped frame. Remember, the width of the frame (mold) will determine the width of the earth reels when rolled up. For example, a



*Preparation of Earth Reels and Construction of Roof  
(Drawings: Vorhauer, Bibl. 23.24) in Appropriate Building  
Materials: a Catalogue of Potential Solutions (SKAT; 1988)*

3-ft frame (mold) will yield 3-ft earth reels when rolled up. Second, place the thatch grass on the frame/mold with the thinner end all to one side. The third step is to fill the mold with mud slurry and place the hard stick over the grass soaked in the slurry. Bend the thatch grass over and roll it up. Then, install the reels in a row over the beam. The following drawings (1 to 4) illustrate these steps.

**EARTH REELS CEILING:** In a forest region, such as in the Ashanti Region where we have our Abetenim Arts Village, earth reels construction system can be used for pitched ceiling and capped with corrugated metal sheet roof. At Abetenim, our goal is put corrugated zinc roof over the earth reels ceiling (for insulation from heat and noise from raindrops) and to create a beautiful ceiling design. The ceiling is to be of a sloping/ cathedral-kind of ceiling (i.e., high gabled-ceiling with exposed beams, well seen from underneath). Because the roofing beams and purlins are exposed to view from inside the

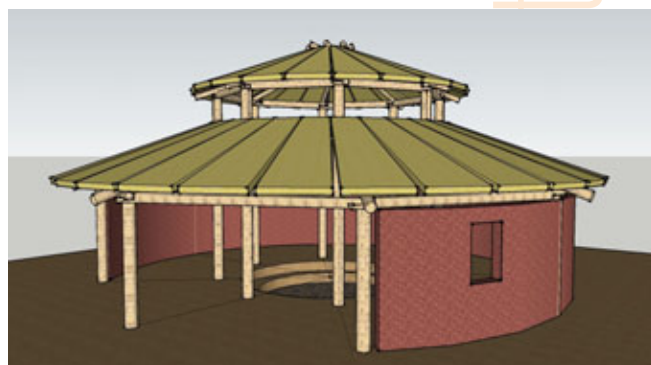
rooms, they need to well planed and sanded for aesthetics.

The specific procedure for earth reels ceiling for roofing with corrugated metal sheets or another durable roofing system is as follow: (1) Lay large timber beams on the gabled mud wall, (2) Lay the timber purlins (rafter) across, and (3) Now, follow steps 1 to 4 in the above illustration- note that the saturated reels are laid vertically between the timber beams when still moist and pressed against each other. The space between them and any cracks after drying are then filled with the mixture. Once dry, you may plaster with mud, if smooth surface is needed. Also note that the height of the purlins should be higher than the rows of earth reels. Why? (3) Because the zinc roofing sheets are to be nailed over the purlins, and not the earth reels ceiling. This will create a little air space in between the earth reels ceiling and the zinc roof for air circulation.

## DESIGN-BUILD PROJECTS IN PROGRESS

### (1) Sang Round House by the Design-Build Team of Nico Smith, Humphrey Lloyd and George Bell from Wales, UK

In February 2012, Nico Smith initiated and collaborated with Humphrey Lloyd and George Bell to design-build the Sang Round House at Sang Arts Village in Northern Ghana. Here are images from the project:

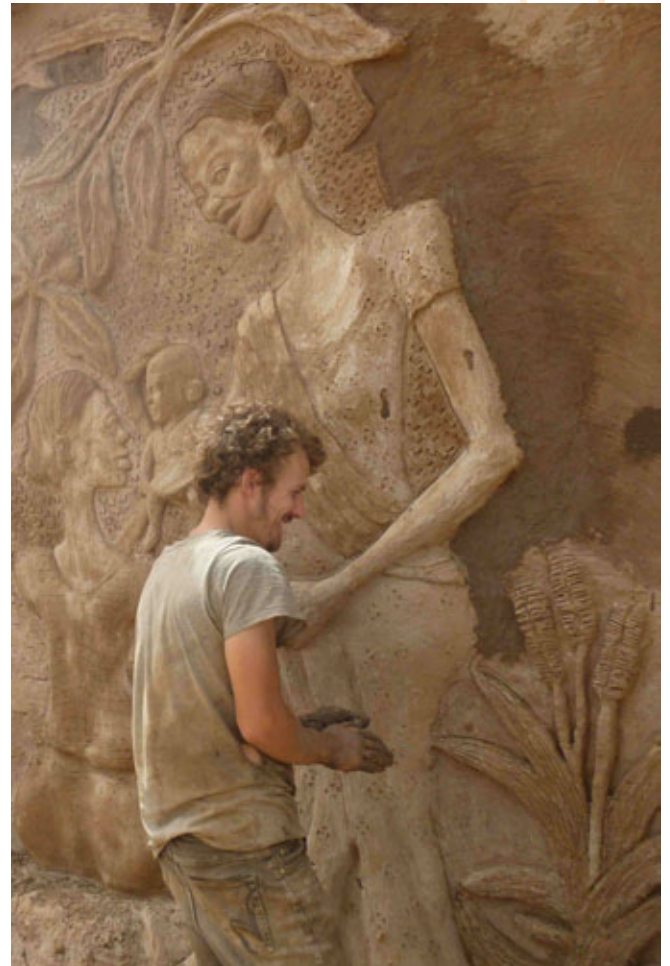


*The Drawing*





**Sang Round House** by the Design-Build Team of Nico Smith, Humphrey Lloyd and George Bell from the UK



Nico Smith on an earth sculpture on a mud wall at Aurovillage, Burkina Faso in March 2012



← **Sang Round House** by the Design-Build Team of Nico Smith, Humphrey Lloyd and George Bell



The Dutch team by the ping pong table they built for Abetenim primary school and organized a tournament



Melle Smets at the Suame Magazine

## (2) Learning from Africa by the Design-Build Team of Melle Smets, Bram Esser and Joost van Onna from the Netherlands

Learning from Africa is to generate an art car as a mobile artist studio and an interview room for a media arts project. Project requires use of our Abetenim Arts Village and Suame Magazine, a neighborhood car market in Kumasi in the Ashanti Region. The art car will be built in collaboration with Ghanaian artists and auto artisans at the Suame Magazine (see the blog, <http://cargocollective.com/setupshop>). Project was initiated by Melle Smets (<http://www.snelwegsfari.nl>). The team was in residency at the Abetenim site from March to May 2012 for the feasibility study for the car that will be built in 2013.

### PROJECT FOCUS TEAM

**Edith Eddy CASTELA** (Country: Iran/India. Specialization: Architecture/Urban Planning);

**Arunima CHATTERJEE** (Country: India/Singapore. Specialization: Energy Efficiency in Architecture Practice);

**Angela ECHEVERRY** (Country: Colombia. Specialization: Business Administrator);

**Tara KABOLI** (Country: Iran/Italy. Specialization: Industrial Design/Artistic Research and Promotion);

**Ruprama RAI** (Country: Nepal/Germany. Specialization: Architecture and Tropical Technologies);

**Afua Ofeibea SAGOE** (Country: Ghana/UK. Specialization: Architecture Practice/Art).



### ORGANIZATION INITIATING PROJECT

#### Nka Foundation

Web Site: [www.nkafoundation.org](http://www.nkafoundation.org).

E-mail: [info@nkafoundation.org](mailto:info@nkafoundation.org).

Barthosa Nkurumeh, PhD; Nka Project Director

### SUPPORTING ORGANIZATIONS



Centre for Continuing Education and Interdisciplinary Research (CCEIR), University for Development Studies ([www.uds.edu.gh](http://www.uds.edu.gh)), P. O. Box 1350, Tamale, Ghana

Designed by **Dima Abu-Arida**, an online volunteer mobilized through [www.onlinevolunteering.org](http://www.onlinevolunteering.org)